Measuring Trust in Institutions

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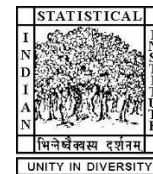
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Abstract

In empirical studies, survey questions are typically used to measure trust; trust games are also used to measure interpersonal trust. In this paper, we measure trust in different institutions by using both trust games and survey questions. We find that generalized trust is only weakly correlated with trust in specific institutions, when elicited both by using a trust game and by using survey questions. However, the correlation between trust in a specific institution elicited through a trust game and stated trust for the same institution is stronger and statistically significant. Thus, our findings suggest that generalized trust is not an appropriate measure of institutional trust and that more specific institutional trust measures should be used.

Contents

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> "*Trust is an important lubricant of a social system. It is extremely efficient;*
> *it saves a lot of trouble to have a fair degree of reliance on other people's word.*
> *Unfortunately, this is not a commodity which can be bought very easily.*
> *If you have to buy it, you already have some doubts about what you have bought*."
>
> —Arrow (1974, 23)

1. Introduction

Trust is a key component in economic activities and is seen by many economists as an important factor for economic growth (Beugelsdijk et al., 2004; Fehr, 2009; Knack and Keefer, 1997; La Porta et al., 1997; Zak and Knack, 2001) and institutional development (Helliwell and Putnam, 1995; La Porta et al., 1999). Investigations of how trust affects different economic outcomes, such as economic growth, have traditionally been based on responses to survey questions such as the World Values Survey trust question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" Trust in institutions is an important factor in explaining why trust has a positive impact on economic growth, typically explained by reduced transaction costs (Fukuyama, 1995). Trust can act as a substitute for reputation in facilitating cooperation and coordination when there are transaction costs (Algan and Cahuc, 2013). Thus, it is important to understand how people trust institutions per se, because this is a crucial factor in understanding the role of trust in economic prosperity.

However, there are methodological challenges in the measurement of trust in institutions. One important question is how well self-reported trust in institutions and self-reported generalized trust measures correlate with actual trust, particularly when compared with trust elicited in monetarily incentivized trust experiments with employees of institutions.

This paper contributes to methods for investigating trust in institutions and to our understanding of trust in institutions. We elicit trust both with a novel institutional trust experiment between entrepreneurs and people working at different institutions and with survey questions on how entrepreneurs trust institutions per se, as well as how much these entrepreneurs trust the institution's employees. The institutions considered in our study include a range of government institutions and utilities, such as tax authorities and electric utilities, whose activities significantly affect entrepreneurs as well as households. As a comparison, we also elicit interpersonal trust using a standard trust experiment and generalized trust questions.

One definition of trust is "a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action, both *before* he can monitor such action … *and* in a context in which it affects *his own* action" (Gambetta, 2000, p. 217). In other words, when we say we trust someone, we implicitly mean that the probability that he will perform an action that is beneficial, or at least not detrimental, to us is high enough for us to consider engaging in some form of cooperation with him (Gambetta, 2000).[1] While this definition is given in an interpersonal relationship setup, most of the elements could be extended to trust in institutions. Put differently, trust in institutions is related to trust in the individuals at the institution, as well as to trust in the institution itself.

There is, however, no single definition of institutional trust. Our starting point is an institutional theory of trust, where trust means a rational evaluation and expectation that the institution will perform satisfactorily (Coleman, 1990; Dasgupta, 1988; Mishler and Rose, 2001). Furthermore, our emphasis is on how individuals' trust might be institution-specific, which means that we will take a micro perspective. To what extent an individual trusts a particular institution will depend on preferences and experiences, especially one's personal experiences with the institution. These experiences can be general, but also can be based very much on specific interactions.

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[1] For a discussion on how risk affects trust in trust experiments, see Eckel and Wilson (2004), Schechter (2007), and Houser et al. (2010).

Institutional trust is also related to the concept of linking social capital. Szreter and Woolcock (2004) distinguish among three different types of social capital: bonding, bridging, and linking. Bonding social capital refers to relationships with other people similar to oneself, while bridging refers to relationships with more distant people, such as those of a different age or social class. Linking social capital defines relationships with others who are in a different power position, such as those working for institutions. While trust and social capital are usually used interchangeably in the economics literature, distinctions exist between the two, as the former is a subset of the latter (Knack and Keefer, 1997; Loury, 1977; Putnam, 1995). It should be noted that trust experiments and most survey questions on trust relate to either bonding or bridging, whereas linking trust has not been as extensively studied.

Trust has primarily been elicited using two different approaches: survey questions and trust experiments.[2] One of the most commonly used survey questions is the World Values Survey's trust question mentioned above. Other surveys elicit trust on a scale typically from not trusting at all to completely trusting, commonly using other people as the group to trust.

Measures of institutional trust have been based solely on stated measures of trust and, as far as we are aware, there have not been any experimental measures. In surveys such as the World Values Survey and Gallup World Poll, trust in different government institutions is measured through questions such as: "Could you tell me how much *confidence* you have in different institutions listed below: quite a lot of confidence, not very much confidence or none at all?" However, it has been argued that such questions might be measuring how well the institutions are functioning rather than how much they are trusted (Beugelsdijk, 2005; Luhmann, 2000). Responses may be based on an institution's reputation, which could just be publicly held opinion about the institution and susceptible to manipulation and stereotyping (Misztal, 2013). Therefore, in this study, we specifically ask how much entrepreneurs *trust* institutions instead of using the word *confidence*. More importantly, unlike the usual practice when measuring stated trust in institutions, we ask not only about trust in the institutions, but also about trust in the employees of the institutions. When individuals are asked to state how much they trust a given institution, it is not clear whether they think of the institution itself, the employees working at the institution, or both.

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[2] For a general discussion on using survey questions and experiments, see Falk and Heckman (2009).

Another strand of trust research has focused on measuring individual trust using an experimental approach. Berg et al. (1995) invented the trust game, which is an experiment that allows causal inferences of trust and trustworthiness. The game has since been extensively applied (for an overview, see Johnson and Mislin, 2011). Typically, both the trustor and trustee are endowed with the same amount of money at the beginning to rule out the possibility that transfer from trustor to trustee might be related to social preferences such as inequality aversion or altruism. The trustor can transfer money to a trustee and any amount sent is tripled before it is handed over to the trustee. Then, the trustee can return any amount received to the trustor. The game captures the key aspect of trust: the more an individual trusts another, the more money he or she will send, so the amount sent is a measure of trust. The amount returned is interpreted as trustworthiness. If more than one-third of the amount received (which is the tripled amount of what the trustor sent) is returned by the trustee, then it paid off for the trustor to trust. A meta-study by Johnson and Mislin (2011) shows that, on average, trustors send 50.2% of the endowment and trustees return 37.2% of the amount received. Thus, on average, it pays off for a trustor to trust, but trustees keep the larger share of the surplus generated by trusting. However, these studies have focused on interpersonal trust and a gap in knowledge still exists as to how this would manifest in trust in institutions.

One ongoing area of research focuses on whether behavior elicited in a trust game correlates with self-reported trust. Most studies find a positive correlation, although the correlations are sometimes small (see Ashraf et al., 2006; Bellemare and Kröger, 2007; Fehr et al., 2003; Holm and Danielson, 2005; Johnson and Mislin, 2012). However, to the best of our knowledge, there are no empirical studies investigating the level of correlation between these two approaches regarding trust in institutions.

To measure institutional trust, we needed a set of different institutions and a population that has experience with the institution and a belief about the degree of trust. Because of this, we conducted the institutional trust experiment with entrepreneurs who own and manage micro-, small-, and medium-sized enterprises in Addis Ababa, Ethiopia. Ethiopia is currently experiencing rapid economic growth in which entrepreneurs are important actors. We investigated their trust in four different institutions with which they interact frequently. Micro-, small-, and medium-sized enterprises are seen as an engine of economic growth for developing countries (Daniels, 1999; Tybout, 2000). A high level of trust in government creates smooth implementation of economic policies, as entrepreneurs will not be suspicious of the government and its intentions (Exadaktylos and Zahariadis, 2012). Moreover, trusting entrepreneurs are more likely to deliver on

their economic responsibilities, such as tax compliance and environmental protection (Kogler et al., 2013; Scholz and Lubell, 1998).

The rest of the paper is organized as follows. In Section 2, we describe how we measure trust, the experiment and survey questions, our sample, and the procedure we followed. Section 3 presents both descriptive and econometric analysis of the results. Finally, Section 4 concludes our paper.

2. Measurement of Institutional Trust

The trust experiment and the survey questions on trust were done as part of a survey study on entrepreneurs in Addis Ababa, Ethiopia. The whole survey consisted of 11 sections. The trust experiment was done in the last section and the survey questions on institutional trust were done in the middle of the survey (Section 6) to keep them apart.

2.1. The Institutional Trust Experiment

The institutional trust experiment followed the same basic design as the standard trust/investment game developed by Berg et al. (1995). Both trustors and trustees each received an endowment of 100 birr (US$4.45 or, in terms of purchasing power parity, US$11.50[3]) each, which corresponds to roughly 1.5 times a daily laborer's wage in Addis Ababa during the survey period. This was done to eliminate other motives for sending money to the trustee, such as inequality aversion and altruism. The trustors had to decide how much to keep and how much to send to a trustee. The amount sent to a trustee was tripled and then the trustee decided how much to keep and how much to return to the trustor.

There were six different trustees and subjects were asked how much they would send to each of the six trustees, presented in random order. However, only one of the six decisions was played out for real payment. This was determined by a random draw after all six decisions had been made. The randomly selected trustee was then informed about the trust experiment and had to decide how much of the amount that had been sent and tripled to return to the trustor and how much to keep. This part of the design builds on the experiment of Falk and Zehnder (2013), in which each trustor decided how much to send

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[3] At the time of the experiment (April 2017), the exchange rate was US$1 to 22.8 birr and the purchasing power was US$1 to 8.7 birr.

to 12 different trustees, out of whom only one was finally payoff relevant. In the trust experiment, we included six different types of trustees: (i) a randomly selected resident of Addis Ababa; (ii) a randomly selected owner of a micro-, small-, and medium-sized enterprise in the district (woreda[4]); (iii) a randomly selected employee at the district's (woreda's) micro and small enterprises development agency; (iv) a randomly selected employee at the district (woreda) administration; (v) a randomly selected employee at the district (woreda) tax authority; and (vi) a randomly selected employee at a sub-regional branch of the electric utility. The presented order was randomized for each subject. The first category, a randomly selected resident of Addis Ababa, can be used as a benchmark to previous trust games.

For each decision, the trustor was given one blue and one green envelope with the same number printed on each envelope. The blue envelope contained 100 birr. The green envelope was empty and had the type of trustee printed on it. The trustor was told to put the amount of money he or she would like to send to the specific trustee in the green envelope. Once the trustor had made a decision, he or she was asked to seal the envelope (even if he or she had decided to send nothing) and give it to the enumerator. The enumerator turned his or her back during the decision process so that the trustor could make his or her decision in secrecy. This procedure was repeated six times. To reduce the influence of order effects, we randomized the order in which the trustees were presented. Once the trustor was done with all six decisions, the enumerator rolled a six-sided die to determine which of the six trustees would receive the payout. The blue envelope that corresponded to the randomly drawn number was given directly to the trustor, while the green envelope was kept for transfer to the trustee.

In the next step, depending on which of the six trustees had been randomly selected, a trustee matching the criteria was randomly selected (as described below) and then approached and informed about the experiment. After the instructions had been read, the trustee was given a green envelope containing the tripled amount and an empty blue envelope. The enumerator asked the trustee to decide how much money he or she would like to send back to the trustor and how much to keep for himself or herself. The enumerator then turned his or her back so that the trustee could make the decision in private. The trustee was instructed to put the amount of money he or she would like to

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[4] A *woreda* is an administrative government unit in the capital Addis Ababa. The city is divided into 10 sub-cities.

send back in the empty blue envelope. Once the trustee was done, he or she sealed the blue envelope and gave it to the enumerator, keeping the green one for himself or herself.

The enumerator brought back the five pairs of envelopes that had not been selected to be payout-relevant and one single envelope from the payout-relevant decision that contained the amount to be sent to the trustee to the principal researchers. The principal researchers then opened the envelopes, recorded the amounts sent, and put the tripled amount in a new envelope given to the randomly selected trustee.

2.2. Stated Trust

The stated institutional trust measures asked respondents to state how much they trust a given institution on a scale from 0 to 10, where 0 represents having no trust at all and 10 represents a situation of complete trust. By specifically asking about trust, we avoid any confusion and ambiguity that might arise from asking about confidence, as is done in the World Values Survey. The stated trust questions were asked in the middle of the firm survey, and well before the trust experiment, to avoid having the subjects remember exactly what they answered. We separately elicited the trust that entrepreneurs have toward the institutions and toward the employees working in these institutions. The question to measure trust for an institution was: "Please tell me on a scale of 0 to 10 how much you personally trust each of the institutions listed below, where 0 means you do not trust the institution at all and 10 means you have complete trust." The question to measure trust for employees at the institutions was: "Please tell me on a scale of 0 to 10 how much you personally trust an employee/individual of the institutions listed below, where 0 means you do not trust the employee/individual at all and 10 means you have complete trust."

2.3. Description of Sample

We sampled the trustors from all micro-, small-, and medium-sized enterprises in Addis Ababa in two stages. First, we randomly chose 260 firms from a list of more than 20,000 registered micro-, small-, and medium-sized enterprises obtained from the Addis Ababa Trade Bureau and the Central Statistical Agency. Then, we chose owner-managers of these enterprises to be the subjects in our study, because they make the important decisions and, hence, have a direct working relationship with the various government institutions. If an enterprise had more than one owner, we selected the owner who was most involved in the day-to-day operations of the enterprise. From this selected sample, only two entrepreneurs refused to participate in the trust experiment due to their belief

that it went against their religious beliefs.[5] In a few cases, the respondents were general managers or spouses of the owners.[6] Descriptive statistics of the trustors are presented in Table 1.

Table 1. Descriptive Statistics of Trustors

Variable	*N*	Mean	Std. dev.	Min.	Max.
Age (in years)	257	38.34	10.20	22	76
At least a college diploma	258	0.29	0.45	0	1
Male	255	0.78	0.42	0	1
Married	258	0.71	0.45	0	1
Christian Orthodox	251	0.76	0.42	0	1
Muslim	251	0.10	0.30	0	1
Protestant	251	0.14	0.34	0	1
Preference for risk taking (between 0 and 10, where 10 is completely risk taking)	258	4.63	3.31	0	10
Business experience (in years)	253	6.88	6.28	0	43
Total number of employees	258	10.05	11.95	1	86
Industry zone location	258	0.32	0.47	0	1
Monthly revenue (in 1,000 birr)	255	45.59	113.99	0	1,000
More than one owner	258	0.45	0.50	0	1
Amhara (=1 if ethnically Amhara)	248	0.40	0.49	0	1
Oromo (=1 if ethnically Oromo)	248	0.16	0.36	0	1
Guraghe (=1 if ethnically Guraghe)	248	0.17	0.37	0	1
Tigray (=1 if from Tigray)	248	0.15	0.35	0	1
Other ethnic groups	248	0.12	0.29	0	1

About one-third of the trustors have attained at least a college diploma and 78% of them are men. We also asked trustors regarding their risk preferences using a stated risk question. The stated risk preference question was asked on a scale from 0 to 10, where 0 represents completely risk averse and 10 represents completely risk taking. Using this measure, an average trustor in our sample considers himself or herself as risk neutral. The average experience as a business owner is almost seven years. In terms of

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[5] The two respondents who refused to participate were Muslims who said that the experiment resembled gambling.

[6] Such cases account for about 3% of our sample (9 enterprises) and the results are robust without these observations as well.

business locations, about a third of the micro-, small-, and medium-sized enterprises that trustors own or represent are located in industry zones or clusters. These clusters are government-provided production areas, usually with very low rental rates. An average micro-, small-, or medium-sized enterprise owned by a trustor reports about 45,000 birr of monthly revenue.

The trustees in our experiment were from six different groups. The first two categories included a randomly selected resident of Addis Ababa and an entrepreneur operating in the trustor's district. The other four categories were government institutions that implement rules at the district level and provide various services that are sometimes important for the establishment, survival, and growth of firms. The entrepreneurship development agency is mainly responsible for nurturing entrepreneurship. This agency provides technical support, facilitates financial access through loans, establishes market linkages through business fairs, and offers business training. The district (woreda) administration is the lowest level of the executive branch of the Ethiopian government in Addis Ababa. It issues and renews licenses, executes the government's labor and environmental regulations, and provides local-level public infrastructure. The third government institution included as a trustee was the tax authority, which is mainly responsible for introduction and enforcement of tax regulations at the lowest administrative level. It provides tax identification numbers, requires businesses to report monthly income statements, collects various taxes, and takes legal measures against tax evaders. The fourth institution is the electric utility, a public utility that is solely responsible for the generation and distribution of electricity service across the whole country, making it a natural monopoly. The utility also collects electricity fees and provides technical support during power outages. These four government institutions together provide the overwhelming majority of services that micro-, small-, and medium-sized enterprises operating in Addis Ababa require for their very existence. Entrepreneurs make frequent visits to the offices of these institutions, giving them the opportunity to interact with the employees of the institutions, starting from the time their firms were established and continuing during their operation.

The micro-, small-, and medium-sized enterprises owned and operated by trustors in our experiment are located in different parts of Addis Ababa and are served by different branches of the institutions. This is mainly because of the decentralized structure of the government offices in the city. The city administration is divided into 10 sub-cities, which are further decentralized into 116 districts (woredas). Three of the institutions we consider in our experiment — the tax authority, entrepreneurship

development agency, and district administration have their lowest administrative branches at the district level and each has about 85 different branches. Unlike the other three institutions, the electric utility is organized into four regional branches.[7] Even though there are generally similar pay scales for similar positions within each branch of a given institution (as they are set to be equal by the government), there might be heterogeneity in how employees perform their work.

We collected a range of observable characteristics for each branch of the institutions from the human resources departments. Since the owners of the micro-, small-, and medium-sized enterprises are in frequent contact with all these institutions, they get to observe and have perceptions about the individuals working in these institutions. In addition, other characteristics of employees, such as average earnings and educational qualifications, are common knowledge among the general population, as this information is publicly available. Table 2 presents the average socioeconomic characteristics of employees of the institutions.

Table 2. Descriptive Statistics of Employees of the Institutions

Institution	Average monthly salary (in birr)	Average age (in years)	Proportion of men	Proportion of employees with at least a college diploma
Entrepreneurship development agency	4,926 (1,199)	30.20 (2.09)	0.75 (0.19)	0.83 (0.17)
Tax authority	5,998 (1,298)	34.48 (2.93)	0.52 (0.25)	0.47 (0.21)
District	2,861 (704)	32.33 (2.45)	0.49 (0.09)	0.52 (0.09)
Electric utility	3,973 (131)	38.94 (2.09)	0.74 (0.02)	0.55 (0.07)

Among the four institutions, the entrepreneurship development agency has the youngest employees, but it has the largest proportion of male employees and the highest number of employees having at least a college diploma. The tax authority has the largest average salary, while it also has the lowest share of workers who have at least a college diploma. Compared with the other three institutions, the electric utility employees have the highest average age.

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[7] The four regional branches are the North, East, South, and West Addis Ababa offices.

2.4. Procedure

The trust experiment was part of a larger firm survey conducted in collaboration
with the Ethiopian Development Research Institute (EDRI). As the institute conducts a
wide range of surveys among both households and firms in the city, it was known to most
of the participants as a neutral research institute. Moreover, to assure participants that the
survey and the experiment were being conducted for the sole purpose of research,
enumerators presented an official letter issued by EDRI addressed to the respective
enterprises explaining this and asking for their participation. We believe the political
neutrality of the institute and the assurances participants were given that their responses
would be treated with the utmost confidentiality ensured good quality responses.
Enumerators were given the physical addresses of the micro-, small-, and medium-sized
enterprises randomly selected for participation. Upon arrival at the participants' places of
business, enumerators were instructed to first introduce themselves and show the official
letter from EDRI asking if the participant would like to participate in a survey. If the
answer was yes, the survey was conducted either immediately or by appointment in
situations where the owner or manager of the enterprise was not present during the first
visit.[8]

In the last part of the survey, the trust experiment was conducted. An enumerator
read aloud the instructions, explaining that both trustor and trustee would have the same
initial endowment, the different stages of the experiment, and how payout would be
determined. We also incorporated three different examples elaborating the outcomes of
different decisions. To reduce any influence that providing examples might have, two of
the examples had either a small or a large amount being sent, while the third presented a
situation where half of the endowment was sent. As our subjects were entrepreneurs and,
hence, relatively literate individuals, it was easy for them to understand the experiment
even without the examples, as we already knew from our pilot studies. However, to avoid
any possible misunderstanding, we kept this format. We informed trustors that they
would be paid within four weeks.

The trustees were selected in different ways depending on the group to which they
belonged. For the randomly selected resident of Addis Ababa, we drew from a sample list
of about 35,000 households obtained from EDRI,[9] taking into account the population

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[8] In case the owners or managers of some enterprises could not be reached, we had also prepared a
replacement list in advance.

[9] We used this list because we were unable to obtain an official registry.

densities of the 10 sub-cities of Addis Ababa. From each of the 10 sub-cities, we randomly chose one district. Based on the population densities, we randomly chose three individuals from eight of the districts and two individuals from the remaining two districts. For fellow entrepreneurs operating in the trustor's district, we randomly selected them from a list of registered micro-, small-, and medium-sized enterprises operating in the same district as the trustor. To choose trustees who were employees of the four government institutions, we first obtained complete lists of employees of each district branch. From these lists, one person was randomly selected if that institution had been drawn in the first stage.[10] For each randomly selected employee, we provided enumerators, with one reserve employee as a replacement in case the employee was on leave or away for a longer period.[11]

Trustees were then approached and informed about the trust experiment in a similar manner as the trustors, including all details. The instructions were also read aloud to the trustees and they were then informed about what happened during the first stage of the experiment. We also presented them with similar examples as we did with the trustors. Once the instructions were read, trustees were each given two envelopes, a green envelope containing the tripled amount and a blue envelope that was empty. After the trustees had made their decisions, the enumerators brought the blue envelopes back to the principal researchers, who counted and recorded the amounts sent back by the trustees. The trustors were then contacted again and received the money the trustees had sent.

3. Results

We first present the results from the trust experiment, where we present the amount sent to each trustee category. Then, we present the findings from the stated trust questions, where we measure the trust level towards the trustee categories using the stated trust questions. Finally, we compare experimental results and stated trust including generalized trust.

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[10] However, it is possible that more than one employee of a given local branch of the institution would be selected as a trustee if there had been more than one draw of trustors served by the given branch in the first stage.

[11] In practice, this happened in only a few instances, about 2% of the cases.

3.1. The Institutional Trust Experiment

In total, we had 258 trustors deciding how much of their endowment to send to the trustee. Descriptive statistics of the amounts sent are presented in Table 3.

Table 3. Amount Sent by Trustors to the Different Trustee Categories ($N = 258$)

Trustee category	Mean amount sent (in birr)	Standard deviation	Proportion of trustors sending zero	Mean amount sent (in birr) conditional on sending nonzero
A resident of Addis Ababa	45.74	28.35	0.078	49.58
Entrepreneur in the same district	45.66	28.79	0.105	51.00
Entrepreneurship dev. agency employee	43.53	30.70	0.132	50.13
District administration employee	35.54	28.27	0.178	43.25
Tax authority employee	34.57	28.38	0.213	43.94
Electric utility employee	32.05	27.55	0.225	41.35

There are clear differences when it comes to the amount sent to the different trustee categories. Only 9% of our sample sent the same amount to all the trustee categories. The trustors sent considerably more to a random resident of the city and an entrepreneur than to any of the employees of the four institutions. Among the institutions, the highest amount was sent to employees at the entrepreneurship development agency. This is perhaps not surprising, since the main task for them is to support entrepreneurs. The amount sent to employees at the electric utility was about 30% lower than the amount sent to a random resident of the city. In a more detailed analysis of the amount sent, we look at the proportion of trustors who sent zero and the amount sent conditionally on sending a nonzero amount. The proportion of trustors sending zero to the trustee categories ranged from 0.078 for a random resident to 0.225 for an employee of the electric utility, while the conditional amount sent ranged from 51% for an entrepreneur in the same district to 41.35% for an electric utility employee. Interestingly, a district administration employee, tax authority employee, and electric utility employee are less likely to receive any amount and also receive less than the other three trustee categories conditional on receiving money.

In Table 4, we provide a more detailed comparison of the amounts sent to the six different categories and a statistical test of the differences.

Table 4. Differences in Amounts Sent among Trustee Categories (*p*-values of Wilcoxon signed-rank test in parentheses) (*N* = 258)

	Entrepreneur in the same district	Entrepreneurship dev. agency	District (woreda)	Tax authority	Electric utility
A resident of Addis Ababa	0.08 (0.707)	2.21 (0.471)	10.20*** (<0.001)	11.17*** (<0.001)	13.69*** (<0.001)
Entrepreneur in the same district		2.13 (0.247)	10.12*** (<0.001)	11.09*** (<0.001)	13.61*** (<0.001)
Entrepreneurship dev. agency			7.99*** (<0.001)	8.96*** (<0.001)	11.48*** (<0.001)
District (woreda)				0.97 (0.727)	3.49 (0.135)
Tax authority					2.52** (0.035)

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Pairwise comparisons of amounts sent to different categories show that the difference in amounts sent are statistically significant for most of the combinations (10 out of 15 cases). The largest difference is when we compare the amounts sent to our benchmark groups (random resident/entrepreneur) and the institutions. The differences are also statistically significant when we compare the amount sent for the entrepreneurship development agency with the three other institutions: the amount of money sent to the development agency is consistently higher. Among the remaining three institutions, the amount sent to an employee of the tax authority is statistically significantly higher than the amount sent to an employee at the electric utility. Overall, what we find is that micro-, small-, and medium-sized enterprise owners appear to have less trust in government institutions with which they have a frequent and direct working relationship.

Next, we investigate to what extent observables correlate with the amounts sent to the four different institutions and the regression results are shown in Table 5. We pool the observations for the four different institutions and include several characteristics describing the institutions and the trustor. In the first model, we only include dummy variables for the different institutions (with the entrepreneurship development agency as the base group). In the second model, we include institutional and trustor characteristics.

Table 5. Regression Models with Amount Sent in the Trust Game as Dependent Variable

	(1)	(2)
Institutional dummies (base group = Entrepreneurship development agency)		
Tax authority	–9.131	-10.420
	(4.24)***	(1.85)*
Electricity utility	–12.488	-12.110
	(6.27)***	(3.14)***
District administration	–8.581	-2.162
	(4.47)***	(0.52)
Institutional characteristics		
Average salary (in 1,000 birr)		2.125
		(1.60)
Average age		0.251
		(0.66)
Proportion of males		7.023
		(0.93)
Proportion of employees with at least a college diploma		2.651
		(0.29)
Trustor characteristics		
Age (in years)		0.307
		(1.85)*
At least a college diploma		0.469
		(0.14)
Male		-5.103
		(1.45)
Married		4.679
		(1.46)
Risk preference		0.835
		(1.90)*
Business experience		-0.132
		(0.51)
Total number of employees		0.117
		(0.74)
Industry zone location		7.798
		(2.31)**
Monthly revenue (in 1,000 birr)		-0.014
		(0.95)
More than one owner		-7.426
		(2.22)**
Religion dummies (base group = Christian Orthodox)		
Muslim		3.003
		(0.52)
Protestant		5.058
		(1.14)
Ethnicity dummies (base group = Tigray)		
Amhara		6.004
		(1.30)
Oromo		7.976
		(1.48)
Guraghe		0.218
		(0.04)
Other ethnic groups		-1.402
		(0.23)
Constant	44.41	0.748
	(21.00)***	(0.04)
R^2	0.024	0.104
Adjusted R^2	0.021	0.080
Number of observations	911	911

Note: The dependent variable is the amount of money sent to each of the trustees in the trust game. Standard errors are clustered at a trustor level.

 *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Model 1 confirms the descriptive statistics, where, in particular, the tax authority and the electric utility are sent lower amounts of money than the entrepreneurship development agency. Only one of the institutional characteristics is close to statistically significance: trustors send more to the trustee when the average salary is higher. Among the trustor characteristics, only a few are statistically significant at the 5% level. If the business is located in an industry zone and if it has only one owner, then the amount sent is higher. Trustors who identify themselves as more risk-taking send more to the trustee. In addition, older trustors send more. The ethnicity of trustors does not significantly affect institutional trust. Trustors who are ethnic Amharas and Oromos (the two largest ethnic groups in Ethiopia) appear to have higher trust in the institutions compared with others, though both effects are not statistically significant.

3.2. Stated Trust

Table 6 shows the level of stated trust for the six different groups of trustees. Note that for the four institutions, we asked two questions, one specifically about employees at the institution and one about the institution itself. The first question was asked for micro-, small-, and medium-sized enterprises in general as well, since the individual question concerned an owner or manager or the business entity itself. The second question was not used in our analysis.

Table 6. Stated Trust in Institutions: Trust in Employees Working at the Institution and the Institution in General

Trustee category		Employees		Institutions		Signed-rank
	Obs.	Mean	Std. dev.	Mean	Std. dev.	*p*-values
A resident of Addis Ababa	235	5.41	2.08	n/a	n/a	n/a
Entrepreneur in the district	235	5.51	2.11	5.47	2.32	0.330
Entrepreneurship dev. agency	235	5.53	2.41	5.86	2.69	0.004
District administration	235	5.18	2.38	5.24	2.73	0.239
Tax authority	235	4.98	2.27	5.40	2.62	0.001
Electric utility	235	4.56	2.29	4.90	2.71	0.034

We begin by comparing the stated trust in the employees and in the institution. The correlation coefficients are between 0.64 and 0.67. Thus, there is a substantial degree of correlation, although it is far from perfect. In general, the stated trust levels when

subjects are asked about the institution are higher than when asked about the employees. Furthermore, the variation in stated trust shows the same pattern as the variation in transferred amount in the trust game, in the sense that the highest trust are for a random resident of Addis Ababa and an entrepreneur in the district, while the lowest trust is for the electric utility.

Next, we investigate whether there are observables that correlate with stated institutional trust in the same manner as we investigated amounts sent in the trust game as shown in Table 5. Again, we pool the responses for the four institutions. We use stated trust in the institution (the results are similar if we use stated trust in the employees). The results are presented in Table 7.

Table 7. Regression Models with Stated Trust in Institutions as Dependent Variable

Institutional dummies (base group = Entrepreneurship development agency)	(1)	(2)
Tax authority	–0.530	-0.351
	(2.61)***	(0.62)
Electric utility	–1.097	-0.821
	(5.17)***	(1.98)**
District administration	–0.706	-0.717
	(3.44)***	(1.68)*
Institutional characteristics		
Average salary (in 1,000 birr)		-0.034
		(0.30)
Average age		-0.030
		(0.87)
Proportion of males		-0.162
		(0.23)
Proportion of employees with at least a college diploma		0.102
		(0.11)
Trustor characteristics		
Age (in years)		-0.023
		(1.26)
At least a college diploma		-0.282
		(0.95)
Male		-0.626
		(1.91)*
Married		-0.350
		(1.14)
Risk preference		0.072
		(1.59)
Business experience		0.045
		(1.76)*
Total number of employees		0.003
		(0.21)
Industry zone location		-0.263
		(0.86)
Monthly revenue (in 1,000 birr)		-0.002
		(1.39)
More than one owner		0.146
		(0.45)

Religion dummies (base group = Christian Orthodox)		
Muslim		0.345
		(0.67)
Protestant		-0.162
		(0.52)
Ethnicity dummies (base group = Tigray)		
Amhara		0.229
		(0.53)
Oromo		1.128
		(2.22)**
Guraghe		0.877
		(1.77)*
Other ethnic groups		-0.086
		(0.16)
Constant	5.985	7.765
	(31.70)***	(4.15)***
R^2	0.021	0.085
Adjusted R^2	0.018	0.059
Number of observations	835	835

Note: Standard errors are clustered at a trustor level. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

None of the institutional characteristics are statistically significant. Stated trust in the electric utility and in the district administration are statistically significantly lower than stated trust in the development agency.

3.3. Comparison of Trust Game and Stated Trust

Let us now compare the trust game and stated trust in more detail. To begin with, we report correlation coefficients for both stated trust measures in Table 8.

Table 8. Correlation between Amounts Sent in the Trust Game and Stated Measures of Trust

Institution	Trust in the game and Stated trust in institutions		Trust in the game and Stated trust in the employees of the institutions		Trust in the game and Generalized trust	
	Correlation	*P*-value	Correlation	*P*-value	Correlation	*P*-value
Entrepreneurship dev. agency	0.21	0.001	0.22	<0.001	0.11	0.103
District administration	0.27	<0.001	0.32	0.005	0.17	0.009
Tax authority	0.23	<0.001	0.19	0.002	0.14	0.029
Electric utility	0.37	<0.001	0.42	<0.001	0.17	0.008

The correlation coefficients between stated trust (for both the institution and employees) and amount sent in the trust game, which range between 0.19 and 0.42, are considerably smaller than the correlations between the two stated trust measures, which we found to range from 0.64 to 0.67. At the same time, they are all statistically significantly different from zero. Squaring the correlation coefficient yields the variance explained; thus, a correlation coefficient of 0.42 means that almost 18% of the variance is explained. If we compare these correlation coefficients with what has been reported in the literature regarding generalized trust and trust games, the correlations found here are still rather large. For example, Johansson-Stenman et al. (2013) found a correlation coefficient of 0.13 when comparing the proportion sent in a trust game and stated trust among Bangladesh subjects. Table 8 also shows that the correlation between generalized trust and trust in the experiment is considerably lower. It is almost half of the correlation found between the specific stated trust question and trust in the experiment.

To explore this further, we next report the average amount sent in the trust game for different levels of stated trust. Figure 1 shows the relationship between the average amounts sent and stated level of trust in more detail. For example, for the electric utility, the average amount sent is 16 birr for the lowest level of trust and 46 birr for the highest level of trust.
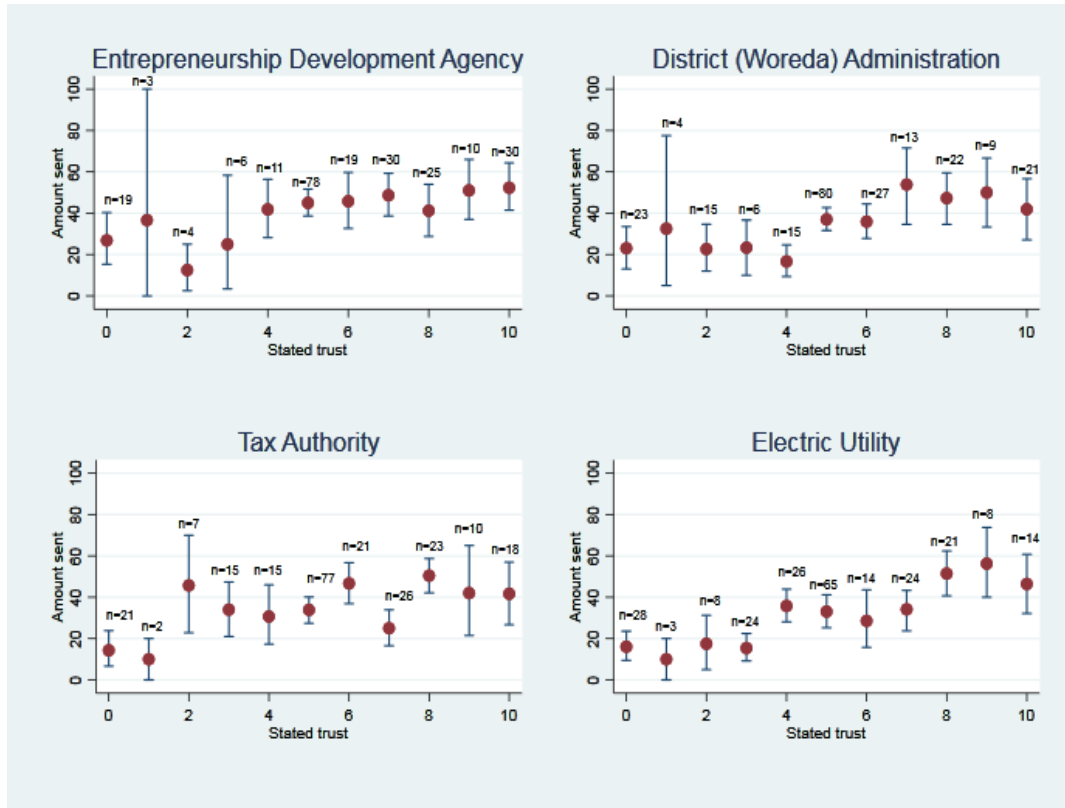
Figure 1. Mean amount sent in the experiment for each stated trust level; 95% confidence interval using 1,000 bootstraps and the percentile method

Finally, in Table 9, we now include the stated trust measures in the regression models with the amount sent in the institutional trust game as the dependent variable. In the first column, we report the results of model 3 from Table 7, but with a smaller sample, since we exclude subjects that did not answer all stated trust questions.[12]

Table 9. Determinants of Amount Sent in the Trust Game, including Stated Trust as Explanatory Variables

	(1)	(2)	(3)	(4)
Institutional dummies (base group = Entrepreneurship development agency)				
Tax authority	-7.836	–9.797	-8.195	-8.732
	(1.33)	(1.24)	(1.03)	(1.53)
Electricity utility	-11.878	–16.840	-16.061	-11.788
	(2.91)***	(2.67)***	(2.59)**	(2.90)***
District (woreda) administration	-2.043	–6.789	-5.496	-2.584
	(0.47)	(1.06)	(0.88)	(0.61)
Stated trust				

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[12] In most cases, this is because they replied, "do not know"; although, one trustor refused to answer the questions.

Stated trust tax authority	2.675	2.758		
	(3.67)***	(3.79)***		
Stated trust district admin.	3.591	3.557		
	(4.91)***	(4.86)***		
Stated trust electric utility	3.833	3.829		
	(6.19)***	(6.04)***		
Stated trust entrep. dev. agency	2.495	2.597		
	(3.09)***	(3.28)***		
Generalized trust				1.868
				(2.81)***
Institution characteristics				
Average salary (in 1,000 birr)	1.454	1.896	1.570	1.548
	(1.02)	(1.40)	(1.15)	(1.10)
Average age	0.116	0.227	0.209	0.056
	(0.28)	(0.57)	(0.53)	(0.14)
Proportion of males	10.100	7.298	10.211	8.725
	(1.27)	(0.95)	(1.33)	(1.12)
Prop. of employees with diploma	3.218	1.184	2.336	1.306
	(0.34)	(0.13)	(0.25)	(0.14)
Trustor characteristics				
Age (in years)	0.301	0.361	0.372	0.279
	(1.71)*	(2.07)**	(2.17)**	(1.60)
At least a college diploma	0.114	0.222	0.849	1.342
	(0.03)	(0.06)	(0.26)	(0.40)
Male	-4.355	–3.356	-2.511	-3.081
	(1.19)	(1.03)	(0.75)	(0.87)
Married	5.342	6.494	6.382	4.215
	(1.58)	(1.91)*	(1.94)*	(1.28)
Risk preference	0.792	0.473	0.550	0.386
	(1.66)*	(1.04)	(1.23)	(0.79)
Business experience	-0.086	–0.183	-0.232	-0.133
	(0.30)	(0.68)	(0.85)	(0.48)
Total number of employees	0.103	0.089	0.104	0.168
	(0.61)	(0.54)	(0.64)	(0.96)
Industry zone location	6.876	7.757	7.675	8.755
	(1.99)**	(2.49)**	(2.46)**	(2.55)**
Monthly revenue (in 1,000 birr)	-0.014	–0.006	-0.008	-0.013
	(0.65)	(0.28)	(0.40)	(0.63)
More than one owner	-8.090	–7.382	-8.585	-8.622
	(2.32)**	(2.41)**	(2.65)***	(2.53)**
Religion dummies (base group = orthodox Christian)				
Muslim	2.943	–0.012	1.716	1.409
	(0.49)	(0.00)	(0.30)	(0.23)
Protestant	3.478	4.376	3.890	2.110
	(0.70)	(0.91)	(0.79)	(0.42)
Ethnicity dummies (base group = Tigray)				
Amhara (=1 if ethnically Amhara)	6.219		5.140	7.841
	(1.26)		(1.11)	(1.69)*
Oromo (=1 if ethnically Oromo)	7.410		3.507	8.933
	(1.29)		(0.64)	(1.67)*

Guraghe (=1 if ethnically Guraghe)	-0.818		-3.861	0.964
	(0.15)		(0.73)	(0.19)
Other ethnic groups	-0.822		-0.806	3.877
	(0.12)		(0.12)	(0.57)
Constant	5.885	–9.783	-13.935	2.020
	(0.29)	(0.50)	(0.71)	(0.10)
R^2	0.103	0.171	0.183	0.125
Adjusted R^2	0.077	0.148	0.156	0.099
Number of observations	835	835	835	835

Note: Dependent variable: amount of money sent for each trustee in the trust game. Standard errors are clustered at the trustor level. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Let us begin by comparing models 1 and 3 in Table 9. In model 3, we add the stated trust measures and all four stated trust measures are statistically significant.[13] Including stated trust results in an increase in the adjusted R^2 from 0.077 to 0.156, almost exactly a doubling of the predictive power of the model. Excluding other explanatory variables, as in model 2, does not affect the statistical significance or magnitudes of the stated trust coefficients to any large extent. Thus, there is a consistent positive relationship between stated trust and behavior in the trust game. There is, however, some variation among institutions. We find the strongest correlation between the trust game and stated trust for the electric utility and the weakest for the entrepreneurship development agency.

Finally, we investigate the correlation between behaviors in the trust game and the generalized measure of trust. In model 4, we estimate a model where we include the generalized trust response instead of stated trust in institutions. The coefficient for generalized trust is positive and statistically significant. However, the coefficient is smaller than the corresponding ones for institutional stated trust, again indicating that the relationship between generalized trust and behavior in the institutional trust game is weaker. Including generalized trust results in an increase in the adjusted R^2 from 0.077 to 0.099, which is also a considerably smaller increase than when including stated trust in institutions.

4. Conclusions

Trust has traditionally been measured by using generalized trust questions or trust games with a focus on investigating interpersonal trust and how trust affects economic

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[13] We conduct a joint significance test of the stated measures and we reject the null hypothesis that they are jointly different from zero by using an F-test (*p*-value < 0.001).

growth that is, bonding or bridging trust. The objective of this paper is to contribute to the trust literature on measurement of linking trust. We measured trust in institutions by using both a novel institutional trust experiment and stated trust questions. We used entrepreneurs as the trustors and different types of institutions with which they frequently interact as trustees. We conducted our study in Addis Ababa, Ethiopia, which is currently experiencing rapid economic growth and where entrepreneurs are important actors for this growth.

Overall, we find a low level of trust toward institutions. As these institutions provide services that are important for the survival and growth of firms, the low level of trust implies that these working relationships could be ineffective. In particular, firms could be suspicious of policies and technologies introduced by these institutions. They might also be reluctant to deliver on their civic and economic responsibilities, such as tax compliance and environmental protection, in light of the low levels of trust they hold for these institutions.

Moreover, we find that entrepreneurs have different levels of trust in different institutions, with trust in our sample being lowest for the electric utility and the tax authority. This finding indicates that it is important to measure institution-specific trust. Our results show that stated trust in a specific institution and the amount sent to the same institution in the experiment is positively correlated and statistically significant. On the other hand, generalized trust, or trust measured as the amount sent to a random individual, is only weakly correlated with institutional trust, although the correlation is still positive and statistically significant. These findings have important implications for how to elicit trust for both stated trust and trust games, and the takeaway message is that, in both cases, trust should be domain-specific. Important topics for future research to analyze in more detail include how much trust varies among domains and what can be considered to be one domain of trust.

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